

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A CDMA base station, ~~which receives a transmission state control command from a mobile station via an up-link so as to make a receiving state of a down-link good in the mobile station and which controls a transmission state of the CDMA base station having not less than two transmission antennas on the basis of the transmission state control command,~~ comprising:

at least two transmission antennas;

a receiving portion which receives a signal from said an up-link signal from a mobile station, the up-link signal comprising a transmission state control command;

an up-link transmission line state estimation portion which estimates the a transmission line state of said an up-link with the transmission antenna of said mobile station from said the received up-link signal;

a down-link transmission line state estimation portion which estimates the a transmission line state of said a down-link from said the received up-link signal;

a transmission state control portion which controls the transmission state of said the CDMA base station on the base-basis of said the transmission state control command taken from said the received up-link signal, the estimated transmission line state of the up-link for the

transmission antenna of the mobile station ~~said estimated up-link~~ and the estimated transmission
state of said estimated ~~down-link~~ transmission line state ~~estimation~~ of the down-link; and

a transmission portion which receives instruction from the transmission state control
portion and performs transmission processing in a transmission state instructed from said
~~transmission state control portion~~ based on the instruction;

wherein controlling the transmission state of the CDMA base station comprises
controlling at least one of a use, a ratio, a power, or a phase of the at least two transmission
antennas.

2. (currently amended): The CDMA base station according to claim 1, wherein ~~said the~~
up-link transmission state estimation portion estimates the transmission line state of said up-link
~~from~~ based on a level reception power of said the received up-link signal.

3. (currently amended): The CDMA base station according to claim 1, wherein ~~said the~~
up-link transmission line state estimation portion estimates the transmission line state of ~~said the~~
up-link ~~from~~ based on a SIR of the data obtained by demodulating said the received up-link
signal.

4. (currently amended): The CDMA base station according to claim 1, wherein ~~said the~~
up-link transmission line state estimation portion estimates the transmission line state of ~~said the~~

up-link ~~from~~ based on a BER of the data obtained by demodulating ~~said the~~ received up-link signal.

5. (currently amended): The CDMA base station according to claim 1, wherein ~~said the~~ up-link transmission line state estimation portion estimates the transmission line state of ~~said the~~ up-link ~~from~~ based on a FER of the data obtained by demodulating ~~said the~~ received up-link signal.

6. (currently amended): The CDMA base station according to claim 1, wherein ~~said the~~ up-link transmission line state estimation portion estimates the transmission line state of ~~said the~~ up-link ~~from~~ based on a level of the transmission line estimate value of ~~said the~~ received up-link signal.

7. (currently amended): The CDMA base station according to claim 1, wherein the received up-link signal further comprises a power control command column, and ~~said the~~ down-link transmission line state estimation portion estimates the transmission line state of ~~said the~~ down-link ~~from a transmitted~~ based on the power control command ~~column~~ which is contained in said received signal.

8. (currently amended): The CDMA base station according to claim 1, wherein

when the transmission line state of the up-link is below a first predetermined value or
when the transmission line state of the down-link is below a second predetermined value, the
transmission state control portion disregards the transmission state control command and
controls the transmission state of the CDMA base station such that transmission is made via one
or more of the at least two transmission antennas, based on the estimated transmission line state
of the up-link; and

~~said transmission state control portion does not follow said transmission state control~~
~~command sent by said up-link when the transmission line state of said up-link is bad or the~~
~~transmission line state of said down-link is bad, but performs the control so as to transmit by the~~
~~transmission antenna having a good characteristic of said up-link and, when the transmission line~~
~~state of said the up-link is good at or above the first predetermined value and, moreover, the~~
~~transmission line state of said the down-link is good at or above the second predetermined value,~~
transmission state control portion controls the transmission state of the CDMA base station based
on the performs the control so as to follow said transmission state control command by said up-
link.

9. (currently amended): The CDMA base station according to claim 1, wherein

when the transmission line state of the up-link is below a first predetermined value or
when the transmission line state of the down-link is below a second predetermined value, the
transmission state control portion disregards the transmission state control command and
controls the transmission state of the CDMA base station according to a predetermined

~~transmission state; and said transmission state control portion does not follow said transmission state control command sent by said up-link when the transmission line state of said up-link is bad or the transmission line state of said down-link is bad, but performs the control so as to transmit in a specific transmission state and,~~

when the transmission line state of the up-link is at or above the first predetermined value and the transmission line state of the down-link is at or above the second predetermined value, transmission state control portion controls the transmission state of the CDMA base station based on the transmission state control command~~when the transmission line state of said up-link is good and, moreover, the transmission line state of said down-link is good, performs the control so as to follow said transmission state control command by said up-link.~~

10. (currently amended): A transmission diversity control method, in a CDMA system comprising a base station, having at least two transmission antennas, and a mobile station which transmits a transmission state control command to the base station in an up-link, the method~~which transmits a transmission state control command from a mobile station via an up-link in order to improve a receiving state of a down-link in said mobile station and which controls the transmission state of a base station having not less than two transmission antennas on the basis of the transmission state control command, comprising the steps of:~~

at the base station, receiving a an up-link signal from said up-link the mobile station;
estimating the a transmission line state of said the up-link with the transmission antenna of said mobile station from said the received up-link signal;

estimating ~~the~~ a transmission line state of ~~said~~ a down-link from ~~said~~ the received up-link signal; and

controlling the transmission state of ~~said~~ the base station ~~from~~ based on the transmission state control command ~~taken from said received signal~~, the estimated transmission line state of ~~said~~ estimated the up-link, and ~~said~~ the estimated down-link transmission line state of the down-link;

wherein controlling the transmission state of the base station comprises controlling at least one of a use, a ratio, a power, and a phase of the at least two transmission antennas.

11. (currently amended): The transmission diversity control method according to claim 10, wherein ~~the step of~~ estimating the transmission line state of ~~said~~ the up-link estimates comprises estimating the transmission line state of the ~~said~~ up-link ~~from~~ based on a level reception power of ~~said~~ the received up-link signal.

12. (currently amended): The transmission diversity control method according to claim 10, further comprising:

demodulating the received up-link signal;

wherein ~~the step of~~ estimating the transmission line state of ~~said~~ the up-link estimates comprises estimating the transmission line state of ~~said~~ the up-link ~~from~~ based on a SIR of the data obtained by demodulating said received demodulated up-link signal.

13. (currently amended): The transmission diversity control method according to claim 10, further comprising:

demodulating the received up-link signal;

wherein ~~the step of~~ estimating the transmission line state of ~~said the~~ up-link estimates comprises estimating the transmission line state of said the up-link from based on a BER of the data obtained by demodulating said received demodulated up-link signal.

14. (currently amended): The transmission diversity control method according to claim 10, further comprising:

demodulating the received up-link signal;

wherein ~~the step of~~ estimating the transmission line state of ~~said the~~ up-link estimates comprises estimating the transmission line state of said the up-link from based on a FER of the data obtained by demodulating said received demodulated up-link signal.

15. (currently amended): The transmission diversity control method according to claim 10, wherein ~~the step of~~ estimating the transmission line state of ~~said the~~ up-link estimates comprises estimating the transmission line state of said the up-link from based on a level of the transmission line estimate value of said the received up-link signal.

16. (currently amended): The transmission diversity control method according to claim 10, wherein ~~the step of~~ estimating the transmission line state of ~~said the~~ down-link estimates

comprises estimating the transmission line state of said the down-link from the based on a
transmitted power control command column included in said the received up-link signal.

17. (currently amended): The transmission diversity control method according to claim 10, ~~wherein the step of~~ when the transmission line state of the up-link is below a first predetermined value or when the transmission line state of the down-link is below a second predetermined value, controlling said the transmission state does not follow said transmission state control command sent by said up link when the transmission line state of said up link is bad or the transmission line state of said down link is bad and performs the control so as to transmit by the transmission antenna having a good characteristic of said up link and comprises disregarding the transmission state control command and controlling the transmission state of the base station such that transmission is made via one or more of the at least two transmission antennas, based on the estimated transmission line state of the up-link; and

~~when the transmission line state of the up-link is at or above the first predetermined value and the transmission line state of the down-link is at or above the second predetermined value, controlling the transmission state of the base station comprises controlling the transmission state of the base station based on the transmission state control command when the transmission line state of said up link is good and, moreover, the transmission line state of said down link is good, performs the control so as to follow said transmission state control command sent by said up link.~~

18. (currently amended): The transmission diversity control method according to claim 10, wherein

when the transmission line state of the up-link is below a first predetermined value or when the transmission line state of the down-link is below a second predetermined value,
controlling the transmission state comprises disregarding the transmission state control command and controlling the transmission state of the base station according to a predetermined ~~the step of~~
~~controlling said transmission state does not follow said transmission state control command sent by said up-link when the transmission line state of said up-link is bad or the transmission line state of said down-link is bad and performs the control so as to transmit in a specific~~
transmission state; and,

when the transmission line state of the up-link is at or above the first predetermined value and the transmission line state of the down-link is at or above the second predetermined value,
controlling the transmission state of the base station comprises controlling the transmission state of the base station based on the transmission state control command ~~when the transmission line state of said up-link is good and, moreover, the transmission line state of said down-link is good,~~
~~performs the control so as to follow said transmission state control command sent by said up-link.~~